Zeitschrift:	Eclogae Geologicae Helvetiae
Herausgeber:	Schweizerische Geologische Gesellschaft
Band:	20 (1926-1927)
Heft:	1
Artikel:	Notes on the Jurassic of Tamazunchale (Sierra Madre Oriental, Mexico)
Autor:	Heim, Arnold
DOI:	https://doi.org/10.5169/seals-158600

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. <u>Mehr erfahren</u>

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. <u>En savoir plus</u>

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. <u>Find out more</u>

Download PDF: 19.08.2025

ETH-Bibliothek Zürich, E-Periodica, https://www.e-periodica.ch

ARNOLD HEIM.

Notes on the Jurassic of Tamazunchale (Sierra Madre Oriental, Mexico).

By ARNOLD HEIM (Zurich).

With 2 figures.

The Front Ranges of Sierra Madre Oriental from Victoria to Tamazunchale studied by the writer in 1925 are made entirely of folds of Cretaceous limestones, the two extremities excepted, where older rocks appear in the nucleus of the larger anticlines.

The oldest formations are found West of Victoria:

1. Gneiss with granate, granite, amphibolite, eclogite and phyllites. They are disconformably overlain by

- 2. Permo-Carboniferous, namely
- a thick series of black schists and graywacke of carboniferous (Peregrina beds, Lower Carboniferous)¹), passing into
- b) the well-known Red beds, which apparently represent the Permian. Thereupon, with the second disconformity, follow

3. the Cretaceous sediments: Novillo beds (auct.) 50 to 100 m, Gypsum beds 100—300 m (Lower Cretaceous ?), Tamaulipas limestone 1000 m (Middle Cretaceous), San Felipe beds 100—400 m and Mendez marls 1000 m (Upper Cretaceous).

The Novillo beds (limestone and ironstone) possibly excepted, which might belong to the uppermost Jurassic, no sediments of Triassic and Jurassic time are present.

In the South, along Rio Moctezuma (Rio S. Juan) above Tamazunchale, a total difference was found below the Cretaceous. The following series is exposed there beginning from below:

Tamán beds auct. (Upper Jurassic).

After having entered the mountains some 4 km above Tamazunchale, a hitherto unknown series was found by Dr. W. FEHR and the writer, made of well-bedded black, finegrained and microcristalline limestone with black shale. For

¹) Discovered by Mr. PARKER ROBERTSON of Tampico.

JURASSIC OF TAMAZUNCHALE.

nearly 10 km the river has cut its way through mountains entirely made of this formation. The writer proposes the name after the village of Tamán situated in the center of its development and at highly fossiliferous localities (fig. 1).



Fig. 1. Sketch-map of Rio Mocte ruma above Tamazunchale by ARN. HEIM.

P = Pimienta beds.T = Tenestipa limestone.

F = San Felipe beds (Coniacian).

M = Mendez marls (Senonian).

+ Overthrust. S Syncline.

* Fossils of Tamán beds (upp. jurassic).

I am indebted to Dr. C. BURCKHARDT (Mixcoac, Mexico D. F.) for the determination of the fossils and the age of these beds.

The most abundant fossils are the Aulacomyellas, which, in certain layers, are accumulated by the thousands, one impression covering the other.

The principal fossiliferous localities encountered on a rapid excursion are:

1. Trail about $1\frac{1}{2}$ km East of Tamán: Haploceras Fialar Oppel[•]sp., H. transatlanticum Burckh., Perisphinctes sp., Aptychus lamellosus Park., Aulacomyella Heimi n. sp. = Upper Kimeridgian.

2. Trail West of La Cuesta: Haploceras Fialar Oppel sp., Perisphinctes cyclodorsatus Moesch in Fontannes, Aspidoceras juv. gr. longispinum Sow., A. cfr. polysarcum Font., A. eligmoptychum Font., Aulacomyella lata n.sp. = Upper Kimeridgian.

3. River bend East of Tamán: Perisphinctes sp. div. ind.

ARNOLD HEIM.

On the latter place, on black calcareous shale washed by the river, huge Ammonites up to 35 cm in diametre are seen in abundance at the surface. The intense cleavage of the rock however does not permit the collection. At the same place, numerous Brachiopods (*Rhynchonella cfr. arolica*) occur in another shaly layer. These beds, according to the structure, belong to the lower part of the Tamán beds (fig. 2).

The total thickness of the Tamán series is estimated to above 1000 metres.¹)

Pimienta beds.

The Tamán Beds seem to pass upwards into a series of black, or black and white thin-bedded dense limestone rich of black chert layers. The name is proposed after the poor Indian huts of Pimienta situated above the trail on the steeply western dipping upper part of this subdivision (fig. 2).

The thickness of Pimienta beds was not measured, but may be estimated to about 100 or 200 metres at Pimienta, and less in the East at the village La Vega.

No fossils having been found, the age remains unknown, but is supposed as Portlandian.

Tenestipa limestone.

This name is given provisionally after the small Indian village of Tenestipa on the South side of Rio Moctezuma West of Tamazunchale.

It is a white dense limestone of about 100 to 200 m at Tenestipa, and several hundred metres in the region of Pimienta. The facies resembles that of Tamasopo Canyon limestone apart from the abundance of chert at Tenestipa. Its intimate relation with the Pimienta beds hardly allows

¹) The so called "Tamán beds" belong mostly to the Upper Kimeridgian and represent the same horizon as the "couches à Haploceras du groupe Fialar", described by C. BURCKHARD1 from Mazapil and other localities of Central Mexico (Boletin Inst. geol. de Mexico No. 23, 1906). The Aulacomyellas are very frequent in mexican beds of this age and have been found by C. BURCKHARDT in Mazapil, by E. BOESE in the South of Monterrey, by ORDONNEZ and BURCKHARDT in Huayacocotla (Huasteca in the State of Veracruz), and by several Petroleumgeologists in the Isthmian region near Minatitlán (Chinameca etc.). In the latter locality Aulacomyellas, very nearly related to the type of the genus (A. problematica Marthe Furlani from the upper Jurassic "Lemes beds" in Dalmatia), have been collected in great number. These "Halobia like" shells have some times been mistaken for triassic fossils. (Additional Note by C. BURCKHARDT.)

amazunchole

Tenestipa

La Vego

vesta

WSW

a coordination with the Tamaulipas limestone of Victoria. The age may be Lower Cretaceous.

The relation with the middle cretaceous series (Tamaulipas-El Abra limestone) is not yet established.

At Xilitla, North of Tamazunchale, the typical El Abra limestone is overlain by Xilitla beds (= Lower Turonian), and underlayn by dense limestone with chert resembling Tamaulipas and possibly identical with Tenestipa limestone.

Structure. The Tamán series forms the nucleus of a huge anticline of N to NW strike, with numerous secondary folds. The upper part of these folds continues towards NW into the cretaceous folds of Xilitla which are overlayn by the overthrusted Tamasopo Canyon limestone of Sierra de Xilitla.

The autochtonous folds of Rio Moctezuma lean over towards East, and are thrusted on its Eastern border upon an enormously crumpled front fold of cretaceous beds. East of Tamazunchale, the cretaceous sediments commence to plunge normally below the Tertiary of the coastal plain.

Manuskript eingegangen am 14. Juni 1926.



